

pulled toward the rear of the upright extraction cleaning machine 12 a suitable distance such that the upper ridged protrusion 857 of the resilient legs 853 moves past the rear wall of the tank housing 46 and the lower ridged protrusion 858 of the resilient legs 853 abuts the inner wall of the tank housing 46. The diameter of the aperture 854 is less than the normal distance between the resilient legs 853 so that the legs 853 are pressed inwardly and thereby prevent the drain plug 850 from separating from the tank housing 46. The drain plug 850 is restored to its normal, closed position by pressing the drain plug 850 toward the front of the upright extraction cleaning machine 12 to cause the washer 856 to abut the rear of the tank housing 46 and turning the drain plug 850 one-quarter turn clockwise.

In use, the operator removes the tank assembly 50 from the well 36 in the base module 14, and further removes the lid 750 from the tank housing 46 to expose the open filling spout 124 of the flexible bladder 120, whereupon the bladder 120 can be filled with water from a source such as a household tap. Next, the user replaces the lid 750 and swings the handle 790 upwardly to seal the lid 750 to the tank housing 46, whereupon the tank assembly 50 can be carried to the well 36 of the base module 14 and replaced therein for use. Upon replacement, the valve member 82 in the valve mechanism 80 mounted in the bottom surface 862 of the tank housing 46 is displaced by the projection 94 in the valve seat 88, whereupon the clean water in the fluid supply chamber 49 is in fluid communication with the fluid application system 950. The detergent supply tank 870 is removed from its well 884, and then its cap 880 is removed so that the tank 870 can be filled with concentrated detergent. Once the supply tank 870 is filled and the cap 880 is replaced thereon, the supply tank 870 is replaced in its well 884, whereupon its valve mechanism 882 permits the flow of concentrated detergent through the conduit 318 to the mixing valve assembly 310.

The extraction cleaning machine 12 can then be powered by activating an main power switch 534 disposed on the handle assembly 16, whereby the motor 196 is activated, and the vacuum source 40 for the working air flow conduits 704, 708 are operable. Further, the heater 54 is separately operable by a heater power switch 536 when the main power switch 534 is in the "on" position. The user then supplies pressurized cleaning solution to the agitation brush 206 by depressing the switch 432 in the closed loop grip 18, 45 whereupon solution flows to and through the fluid dispensing nozzles 100. As the user applies cleaning fluid and agitates the surface being cleaned with the brush 206, the user pushes the cleaning machine 12 forward and rearward, with the forward strokes being defined as wet cycles and the rearward strokes being defined as dry cycles. During the wet cycles, the cleaning solution is applied to the surface via the fluid dispensing nozzles 100 and the agitation brush 206 scrubs the subjacent surface. During the dry cycles, the suction nozzle 34 removes applied solution, as well as dirt 50 and debris, from the surface being cleaned and carries it to the recovery chamber 49 via the working air conduit 704.

The cleaning machine 12 can also be used as a pre-spray applicator and agitator by simply diverting the air from working air conduit 704 to the working air conduit 708, 60 which connects the vacuum source 40 to the accessory hose 22. In this use, the accessory hose 22 functions solely as a bypass aperture for the working air supplied by the vacuum source 40. Thus, fluid is applied via the fluid dispensing nozzles 100 and agitated into the surface being cleaned by the brush 206, but there is no suction at the suction nozzle 34, and thus no dry cycle. When the solution has been

adequately applied and the surface adequately agitated, the user can divert suction back to the working air conduit 704, whereupon the applied solution and other debris can be removed from the surface without application of solution, which is controlled by the user through trigger 432.

To use the accessory cleaning tool (not shown), the user diverts working air flow from the conduit 704 to the conduit 708, whereupon the accessory hose 22 is fluidly connected to the vacuum source 40. Furthermore, the user can apply pressurized cleaning fluid to the surface to be cleaned by pressing the grip valve 132 on the accessory cleaning tool. In sum, cleaning solution can be applied by actuating the grip valve 132 and removed via the suction nozzle (not shown) in communication with the vacuum source 40 via the working conduit 708. Also, the accessory tool may further include an agitation brush driven by an impeller that is driven by ambient air drawn through an aperture distinct from the suction nozzle in the accessory tool, but towards the same vacuum source 40.

Once the surfaces have been cleaned, or the recovery chamber 48 has become filled and the float assembly 900 has blocked the air exit 762 from the air/water separator lid 750, power to the cleaning machine 12 is turned off and the tank assembly 50 is removed from the well in the base module 14 and carried by its handle 790, which seals the lid 750 to the tank housing 46, and carried to a point of disposal, such as a sink drain, whereupon the contents of the recovery chamber 48 can be emptied by removing the drain plug 850 from the aperture 854 through wall 852. Once removed, the contents of the recovery chamber 48 flow through the aperture 854. Furthermore, the tank assembly 50 can be rinsed with clean water, which also flows through the aperture 854 in the wall 852 of the tank housing 46.

While particular embodiments of the invention have been shown, it will be understood, of course, that the invention is not limited thereto since modifications may be made by those skilled in the art, particularly in light of the foregoing teachings. Reasonable variation and modification are possible within the scope of the foregoing disclosure of the invention without departing from the spirit of the invention.

What is claimed is:

1. A portable surface cleaning apparatus, comprising:
a base module for movement along a surface and having
a front portion and a rear portion;
a brush assembly having an agitation brush generally
disposed in the front portion of the base module and a
pivot arm for pivotally supporting the agitation brush
relative to the base module;
a first end of the pivot arm is mounted to the agitation
brush and a second end of the pivot arm is pivotally
mounted to the base module, whereby the brush assem-
bly is free floating to adjust to different surface heights;
a handle pivotally attached to the rear portion of the base
module for movement between an upright position and
an inclined position, and including a lower portion
having an outer surface;
- a fluid recovery system comprising:
a tank on the base module having a fluid recovery
chamber for holding recovered fluid;
a suction nozzle associated with the base module;
a working air conduit extending between the recovery
chamber and the suction nozzle;
- a vacuum source in fluid communication with the recov-
ery chamber for generating a flow of working air from
the nozzle through the working air conduit and through

the recovery chamber to thereby draw dirty liquid from the surface to be cleaned through the nozzle and working air conduit and into the recovery chamber;

a liquid dispensing system comprising:

- a liquid dispensing nozzle;
- a fluid supply chamber for holding a predetermined amount of supply fluid;
- a fluid supply conduit fluidly connected to the fluid supply chamber and to the dispensing nozzle for supplying liquid to the dispensing nozzle; the 10 improvement comprising:

an elevator assembly including an elevator arm reciprocally mounted to the base module and movable between rear and forward positions in response to movement of the upright handle from the inclined 15 position to the upright position;

a first end of the elevator arm is disposed adjacent the pivot arm and is adapted to lift the pivot arm from the surface as the elevator assembly moves between the rear and forward positions and a second end of the 20 arm is engagable with the handle for moving the elevator assembly between the rear and forward positions as the handle moves between the inclined and upright positions;

whereby pivoting the upright handle from the inclined 25 position to the upright position is translated into movement of the agitation brush away from the surface to be cleaned.

2. A portable surface cleaning apparatus according to claim 1 wherein the first end of the elevator arm has a lifting 30 surface for upwardly pivoting the pivot arm and the lifting surface is a ramp that slides along a bottom surface of the pivot arm.

3. A portable surface cleaning apparatus according to claim 2 and further comprising a spring that biases the 35 elevator arm toward the handle.

4. A portable surface cleaning apparatus according to claim 3 wherein the second end of the elevator arm abuts the outer surface of the lower portion of the handle in the upright position.

5. A portable surface cleaning apparatus according to claim 1 wherein the agitation brush is pivotally mounted to the first end of the elevator arm.

6. A portable surface cleaning apparatus, comprising:

- a base module for movement along a surface to be cleaned and having a front portion and a rear portion;
- a brush assembly having an agitation brush generally disposed in the front portion of the base module for contact with the surface to be cleaned and a support arm for supporting the agitation brush for free floating vertical movement relative to the base module;
- a handle pivotally attached to the rear portion of the base module for movement between an upright position and an inclined position;
- 50 a dirt collector on the base module for holding recovered dirt;
- a suction nozzle associated with the base module;
- a working air conduit extending between the dirt collector and the suction nozzle;

a vacuum source in fluid communication with the dirt collector for generating a flow of working air from the nozzle through the working air conduit and into the dirt collector to thereby draw dirt and debris from the surface to be cleaned through the nozzle and working air conduit and into the dirt collector;

the improvement comprising:

- an elevator reciprocally mounted to the base module and movable between rear and forward positions in response to movement of the upright handle from the inclined position to the upright position;
- a first end of the elevator is disposed adjacent the support arm and is adapted to lift the support arm from the surface as the elevator moves between the rear and forward positions and a second end of the elevator is engagable with the handle for moving the elevator between the rear and forward positions as the handle moves between the inclined and upright positions;
- whereby pivoting the upright handle from the inclined position to the upright position is translated into movement of the agitation brush away from the surface to be cleaned.

7. A portable surface cleaning apparatus according to claim 6 wherein the elevator includes an elevator arm that has a forward end that is disposed adjacent the support arm and is adapted to lift the support arm from the surface to be cleaned as the elevator moves between the rear and forward positions.

8. A portable surface cleaning apparatus according to claim 7 wherein the support arm is pivotally mounted to the base module.

9. A portable surface cleaning apparatus according to claim 8 wherein a first end of the support arm is mounted to the agitation brush and a second end of the pivot arm is pivotally mounted to the base module.

10. A portable surface cleaning apparatus according to claim 7 wherein the forward end of the elevator arm has a lifting surface for lifting the support arm and the lifting surface is a ramp that slides along a bottom surface of the pivot arm.

11. A portable surface cleaning apparatus according to claim 7 wherein the elevator arm has a second end that abuts the outer surface of the lower portion of the handle in the upright position.

12. A portable surface cleaning apparatus according to claim 7 wherein the support arm is pivotally mounted to the base module.

13. A portable surface cleaning apparatus according to claim 6 and further comprising a spring that biases the elevator rearwardly.

14. A portable surface cleaning apparatus according to claim 6 wherein the agitation brush is pivotally mounted to the support arm.

15. A portable surface cleaning apparatus according to claim 6 wherein a first end of the support arm is mounted to the agitation brush and a second end of the pivot arm is pivotally mounted to the base module.